

PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION

Improvements in the Re-inforcement of Concrete or the like

We, LIGNOCRETE LIMITED, a Company incorporated under the laws of British Guiana, whose registered office is at 52, Water Street, Georgetown, Demerara, 5 British Guiana, and GERALD OTLEY CASE, of 90, Robb Street, Bourda, Georgetown, aforesaid, a British Subject, do hereby declare the nature of this invention to be as follows:—

10 This invention relates to the re-inforcement of concrete walls, ceilings, beams, piles, columns, slabs, or the like.

The object of this invention is to remedy defects inherent in former 15 methods and/or to cheapen the cost of manufacture or construction.

For example, some previous proposals for reinforcing ordinary concrete with wood rods rigidly connected together 20 have stipulated that the rods be treated with a suitable preservative or soaked in water before filling in the concrete. Such methods are either unnecessary or not practicable in commercial production.

25 Preservatives do not prevent the wood rods absorbing water from wet concrete mixtures before setting has taken place and the result is that the timber rods expand and injure the set of the concrete.

30 If the timber rods are soaked in water before insertion in the wet concrete mixture, the exact amount of water must be absorbed by the wood rods to prevent injury to the concrete in setting, and 35 this is impossible in commercial practice as the seasoned wood rods have a variable water content. If the wood rods are soaked too long shrinkage subsequently takes place weakening the bond between 40 the concrete and the rods. If the timber rods are soaked too short a time they take

up water from the wet concrete mixture before final setting has taken place and in expanding injure the set of the concrete.

According to this invention mass concrete or precast concrete units, made with Portland cement or alumina cement and any suitable aggregate of sand, 45 stone, gravel, broken brick, or mixtures of these materials or chemically treated sawdust and the necessary gauging water are reinforced with wood rods previously soaked in a 5 to 10° Beaumé solution of mineral salt such as sodium chloride. 50

In making reinforced concrete beams, piles, columns, slabs or walls (other than lath and plastered walls) we find that a suitable mixture for making the concrete is four parts broken stone, two parts sand 60 and one part Portland cement.

In accordance with this invention wood rods for reinforcing piles, beams, columns, slabs or the like are soaked in a 5 to 10° Beaumé solution of a mineral salt such as sodium chloride before 65 filling in the concrete around them. For ceilings or walls where wood laths are used the laths are soaked in a 5 to 10° Beaumé solution of mineral salt such as sodium chloride before they are nailed to the timber joists or timber framework. 70 The laths are then plastered with a mixture of 2 or 3 parts of sand and 1 part of Portland cement, gauging water being added until the plaster is of a suitable consistency to be readily applied with 75 ordinary plasterers' tools.

Dated this 5th day of July, 1938.

MARKS & CLERK.

COMPLETE SPECIFICATION

Improvements in the Re-inforcement of Concrete, Plastered Structures or the like

We, LIGNOCRETE LIMITED, a Company 80 incorporated under the laws of British Guiana, whose registered office is at 52, Water Street, Georgetown, Demerara, British Guiana, and GERALD OTLEY CASE, of 90, Robb Street, Bourda, Georgetown, Demerara, British Guiana, 85 a British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:— 90

This invention relates to the reinforcement by means of timber rods of mass concrete roads, buildings, walls, beams, piles, columns, slabs, and other structures including ceilings, partition walls and the like.

The object of this invention is to remedy defects inherent in former methods of timber reinforcement and/or to cheapen the cost of manufacture or construction.

For example, some previous proposals for reinforcing ordinary concrete with wood rods rigidly connected together have stipulated that the rods be treated with a suitable preservative such as creosote or soaked in water before filling in the concrete. Such methods are either unnecessary or not practicable in commercial production. Preservatives do not prevent the wood rods absorbing water from wet concrete mixtures before setting has taken place and the result is that the timber rods expand and injure the set of the concrete.

If timber rods are soaked in water before insertion in the wet concrete mixture, the exact amount of water must be absorbed by the wood rods to prevent injury to the concrete in setting, and this is impossible in commercial practice as the seasoned wood rods have a variable water content. If the wood rods are soaked too long shrinkage subsequently takes place weakening the bond between the concrete and the rods. If the timber rods are soaked too short a time they take up water from the wet concrete mixture before final setting has taken place and in expanding injure the set of the concrete.

It has been proposed for the treatment of reinforcing wood rods used in strengthening concrete to impregnate wood with a highly basic solution of a metallic salt and then bring the wood into contact with cement whereupon a solid compound was precipitated in and on the wood due to the alkaline character of the cement thus closing the pores in the wood and forming a connecting link between the wood and the cement.

The process of preparing a timber reinforcement for use with cementitious plaster, or concrete compositions according to the present invention consists in mixing water and rock salt in the proportions to give a 5-10° Beaumé solution and soaking the timber in the said solution so that the reinforcement does not subsequently absorb water from the plastic composition in which the saturated reinforcement is embedded and thereby expand, and the small amount of shrinkage of the reinforcement due to

water subsequently given up by the reinforcement is counteracted by shrinkage of the composition in drying out.

In carrying the invention into effect mass concrete or precast concrete units, made with Portland cement or alumina cement and any suitable aggregate of sand, broken stone, gravel, broken brick, or a mixture of any of these aggregate materials and the necessary gauging water are reinforced with wood rods previously soaked for about 6 hours in a 5 to 10° Beaumé solution of rock salt; it being understood that water and rock salt are mixed in proportions to give the required 5 to 10° Beaumé strength.

In order that this invention may be clearly understood and carried into effect suitable methods of reinforcing a road, a beam and a pile are described.

Figure 1 of the accompanying drawings illustrates a road or pavement constructed in accordance with this invention. The concrete *a* is reinforced with timber rods *b* which have been soaked with the rock salt solution before being placed in position.

Figures 2 and 3 illustrate beams and Figure 4 a sheet pile. In Figures 2 and 4, *a* represents the concrete and *b* the timber rods which have been soaked with the rock salt solution before being placed in position.

In Figure 3, *a* represents the concrete and *b* and *c* the timber reinforcements which have been soaked with the rock salt solution before being placed in position.

For ordinary work a suitable mixture for the concrete, for making reinforced concrete beams, piles, columns, slabs or walls (other than lath and plastered walls), is 4 parts broken stone, 2 parts sand and 1 part Portland cement.

In accordance with this invention wood rods for reinforcing piles, beams, columns, slabs or the like are soaked in a 5 to 10° Beaumé solution of rock salt before filling in the concrete around them. For ceilings or walls where wood laths are used the laths are soaked in a 5 to 10° Beaumé solution of rock salt before they are nailed to the timber joists or timber framework. The laths while still soaked are then plastered with a mixture of 2 or 3 parts of sand and 1 part of Portland cement, gauging water being added until the plaster is of a suitable consistency to be readily applied with ordinary plasterers' tools.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

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1. A process of preparing a timber reinforcement for use with cementitious, plaster or concrete compositions which consists in mixing water and rock salt in the proportions to give a 5-10° Beaumé solution and soaking the timber in the said solution so that the reinforcement will not subsequently absorb water from the composition in which the saturated reinforcement is embedded and thereby expand, and the shrinkage due to the small amount of water subsequently given up by the reinforcement will be counteracted by shrinkage of the composition in drying out.

2. In the construction of roads, buildings, walls, plaster walls and ceilings, columns, piles, slabs and other structures, the provision of a cementitious plaster or concrete mix reinforced with timber rods previously soaked in a

5-10° Beaumé solution of rock salt, so that the rods will not absorb water from the composition in which they are embedded and thereby expand, and the shrinkage due to the small amount of water subsequently given up by the rods will be counteracted by shrinkage of the composition in drying out.

3. In the construction claimed in Claim 2, employing a mix embodying sand, gravel, broken stone, broken brick, or a mixture of any of these aggregates, Portland cement and gauging water.

4. In the construction claimed in Claim 2, employing sand, gravel, broken stone, broken brick or a mixture of any of these aggregates, alumina cement and gauging water.

Dated this 22nd day of April, 1939.

MARKS & CLERK.

[This Drawing is a reproduction of the Original on a reduced scale.]

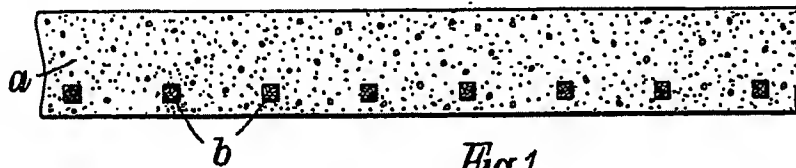


Fig. 1

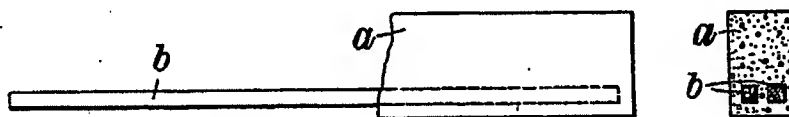


Fig. 2

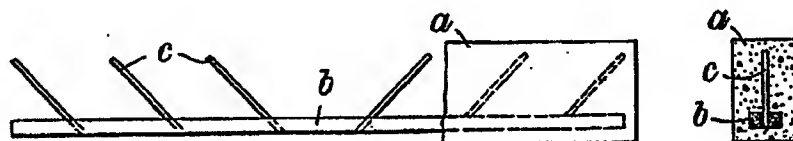


Fig. 3



Fig. 4